UL Solutions

High voltage cable field testing program (HVCFTP)

High voltage (HV) cables transmit massive quantities of electrical power across vast distances, making them vital components of the power grid infrastructure and our everyday lives. Because everything from streetlamps to hospitals requires electricity to operate, interruptions in transmission can potentially have serious consequences.

UL Solutions can field test HV cables throughout their entire life cycle. From the day HV cables are shipped from the manufacturing plant to long after installation, we can help circuit owners and operators increase confidence in the reliability and performance of their cable systems.

Services tailored to your needs

UL Solutions offers customized services to test your unique range of HV cables. We can evaluate your installation, electrical properties and insulation integrity and, in turn, help you minimize non-compliance risks associated with failures and malfunctions. Throughout the life cycle of your HV cable systems, we can deliver a range of tests to numerous standards, including essential ones from:

- The Association of Edison Illuminating Companies (AEIC)
- The Insulated Cable Engineers Association (ICEA)
- The International Electrotechnical Commission (IEC)
- The Institute of Electrical and Electronics Engineers (IEEE)

Our comprehensive, expert-backed tests include:

- **Acceptance**
  Before installation, this test evaluates cables for damage from handling and transportation.
- **Commissioning and recommissioning**
  This test identifies defects in the installation process or defects requiring repair and assesses the condition of the cable system prior to energizing.
- **Condition assessment**
  For cables in service, this test evaluates the condition of the insulation and the performance of the cable system.

Between 2021 and 2023, UL Solutions has performed commissioning, recommissioning and condition assessment tests for over 180,000 feet of HV cable systems, including over 150 cable segments and 350 accessories. The tested cables contained both inland and submarine cables, solid dielectrics (XLPE) and high-pressure fluid-filled (HPFF) insulations, with rated voltage ranges from 69kV to 345kV.

UL Solutions' most common HV cable testing technologies

Test technologies	Acceptance	Commissioning/ recommissioning	Condition assessment	Standards
HVAC withstand		●	●	IEC60840, IEC62067, AEIC CS9, ICEA S108-720
Partial discharge (online and offline)		●	●	IEEE 400.3
Sequence/ line impedance		●		IEEE 1870, IEEE 400.2
VLF withstand		●	●	IEEE 400.2
Dielectric loss		●	●	IEEE 400.2
TDR	●	●	●	IEC 63026, TB 490
OTDR	●	●	●	TB722, IEC 60793
Jacket integrity test	●	●	●	IEC60840, IEC62067
Conductor resistivity	●	●	●	IEC60840, IEC62067
Insulation resistance	●	●	●	IEC60840, IEC62067
Phase identification	●	●		

Why UL Solutions for HV cable field testing

Today, UL Solutions stands as a global market leader in wire and cable testing, inspection, certification and verification. Our committed team boasts decades of experience in evaluating HV cable systems, so when you look to UL Solutions, you can trust us to provide:

Expertise
We understand the intricacies of HV cables and can deliver accurate, reliable results.

Comprehensive services
Our end-to-end testing can assess performance of HV cables and evaluate system integrity.

Customized offerings
We can adapt testing methodologies to meet your cables' specific needs, and we can work with you to provide the most relevant, actionable insights.

Objective evaluations
As a trusted third party, we offer impartial assessments. Our recommendations are informed by scientific principles and industry best practices.

Scientific excellence
We utilize in-depth scientific knowledge and advanced technologies, and our testing procedures adhere to rigorous industry standards.

When you look to UL Solutions, you can leverage our science-backed expertise to help you mitigate your non-compliance risks and optimize the performance and reliability of your HV cable systems.

To learn more, please contact us or visit UL.com/hvcftp

UL Solutions

Safety. Science. Transformation.™

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